

**ABSTRACT**

The invention is an ultrasonic medical imaging system that utilizes a spot focused architecture where very large aperture transducer arrays focus at a spot giving very high resolution imaging. The associated depth of field and focal length cause a small focused spot at a pre-set depth for each transmit-receive operation. Scanning in a field of view depends on rapid movement of the focus spot, necessitating transmit-receive events that overlap in time. Coded signals are used to suppress interference caused by such overlap. Replica correlation selects received codes where a correlator channel produces a single image data sample for each spot. Attenuation leveling and fixed paths to spots enable prediction and compensation for frequency dependent attenuation to enable effective broad band operation. Included is a bistatic arrangement of sparse arrays. Transducer elements are constructed by cutting strips from thin cards of piezo-electric material, where electric fields operate transversely to the direction of intended propagation of waves.